

electrically connected to the crucible, to reverse galvanic potential and thus inhibit corrosion or dissolving of the crucible by the melt, which is employed for growing an oxide crystal therefrom.

In sum, neither Park nor Kurosawa discloses a structure that provides for electromagnetically stirring a melt in a container or vessel. That is, there is no suggestion of combining the magnetic structure of Park with the electrical structure of Kurosawa to suggest the structure of applicants' claim 11 unless one has in view applicants' own disclosure. This is hindsight reconstruction that does not establish obviousness, In re Civitello, 144 USPQ 10.

That is, there is no motivation in the prior art to combine the Park structure whose surrounding magnet is anti-stirring with the Kurosawa structure, which is also incapable of stirring and is only capable of anti-galvanic action, to arrive at the electromagnetic structure that is defined by applicants' claims 11 et seq.

Again, there is no suggestion or motivation to combine the above two patents, absent applicants' own disclosure.

As for applicants' claims 12-15, it is believed that these claims are novel over the applied art, in view of their ultimate dependence from applicants' claim 11, which is believed novel thereover as discussed above.

The Office Action rejection of claims 16-19 as anticipated under 35 USC 102 (b) or as obvious under 35 USC 103 (a) over the Lorenz et al patent (' 549) is respectfully traversed. The Lorenz patent discloses vapor deposition of thin film for p-n junction purposes. This is an old technique dating back to the 1970s, suitable for making such film or semiconductor chips.

However, applicants' claim 16 defines growing a crystal from a melt, that is, a crystal in bulk, which is a considerably different product than a vapor deposited chip. That is, in a chip, an electron is limited in its directional movement unlike in a crystal, as defined herein on page 2 of the specification, wherein such electron has movement in all directions for greater conductivity.

As for the reference in claim 16 to *more uniform composition*, this is the kind of uniformity that comes with electromagnetic stirring of the melt. This uniformity is

discussed at length in the specification beginning with the last 3 lines on page 7 and continuing on all of page 8. Thus it is noted that in commercial practice, low defect density crystals can only be obtained by bottom seeded methods but these methods proceed slowly and produce crystals lacking in uniformity of properties. The bottom seeded method of the present invention, overcomes the above disadvantages and there is a need for crystals with low defect density and uniform properties such as GaSb for IR transparent windows and the like. Such crystals are said not to exist in the prior art and further advantages are listed at the bottom of page 8.

Also, the term "uniform" is defined on page 4 as meaning a crystal having a constant composition throughout its body or nearly so. Such uniformity is not possible without electromagnetic stirring of the melt as defined in claim 16 hereof.

Again the Lorenz patent is limited to vapor deposited film or chips, whereas claim 16 is directed to crystals of uniform composition which have the uniformity that comes with stirring the precursor melt as claimed. That is, without stirring of the melt, non-uniform crystals result as indicated in the middle of page 8. Here applicants provide, per claim 16, sizable uniform crystals while the Lorenz patent teaches vapor deposited chips, a structurally different product.

The Office action rejection of claims 16 & 18 as indefinite under 35 USC 112 is respectfully traversed. It is believed that the "more uniform composition melt" noted in claim 16 d) is the result one obtains by electromagnetic stirring, as discussed above while "low defect density" is a widely recognized term, by those skilled in the art, for crystals of acceptable conductivity. Again reference is made to the discussion of *low defect density crystals* and *crystal uniformity* in the specification on page 8 referred to above.

Also claims 17-19 are believed novel over the applied art in view of their dependence from claim 16, which is believed novel thereover as discussed above.

In view of the foregoing, the claims of record are believed distinguished over the applied art and in condition for allowance.

In accordance with Section 714.01 of the M.P.E.P., the following information is presented in the event that a call may be deemed desirable by the Examiner: to Thomas C. Stover, (781) 377-3779.

Respectfully submitted,



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